

Target Zero

Our Target is Spill-Free, Error-Free Operations



SENIOR PIPELINE CO.

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A User Centered Approach to Lessons Learned Success

SELLS Presentation

Jennifer Adkisson

David Mitchell

Charles Alday



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Purpose of Presentation

- Introduce company and philosophy
- Describe the successful introduction of OPIS 2
- Describe the ways Colonial is using OPIS 2
- Provide some measures of success



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Company Profile

- Largest refined products pipeline
- Approximately 5500 miles
- From Houston to Linden, NJ
- Approximately 700 employees



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Company Profile (cont)

- Headquarters in Alpharetta, GA
- Owned by 7 oil companies
- Transports 80 million gallons per day



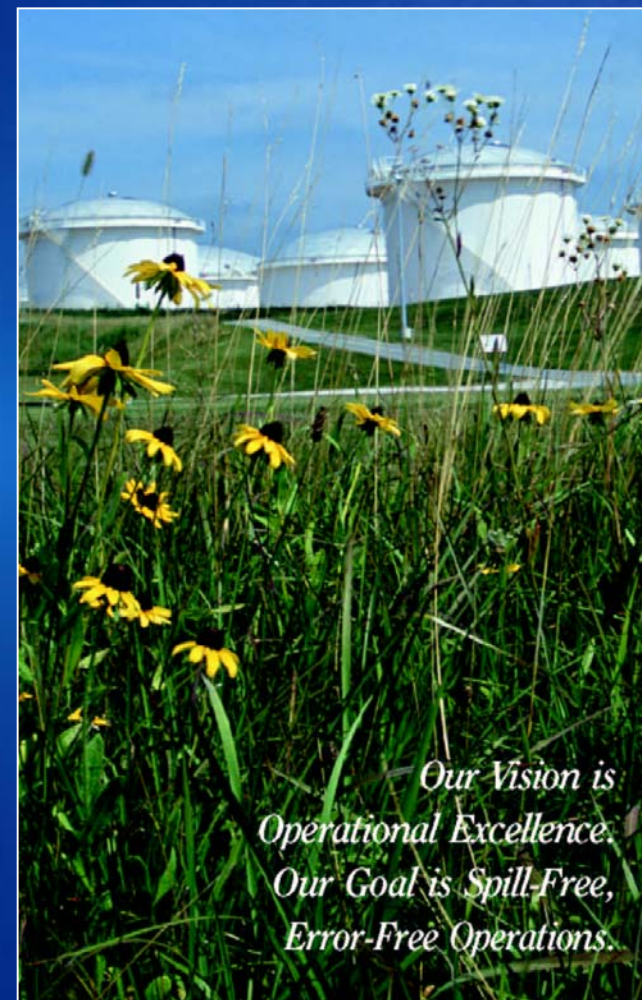
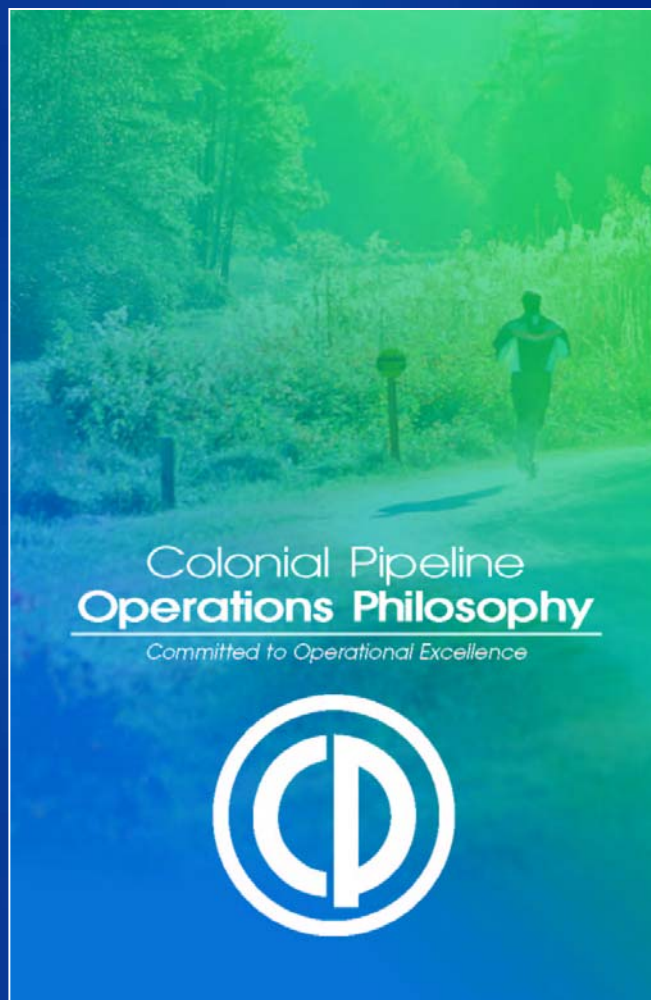
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Operations Philosophy



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Operations Philosophy

It is Colonial's belief that the primary responsibility of its operations is to protect the public, the environment and Colonial's workforce, both employees and contract workers.



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Operations Philosophy

Our fundamental operations philosophy is a conservative, disciplined and systematic approach to all aspects of our work to achieve spill-free, error-free operations.



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Operations Philosophy

Colonial will continually strive to improve its operations in order to achieve spill-free, error-free operations.



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Operations Philosophy

Complete, accurate, and continuous communication promotes trust and ensures continuous learning.



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Operations Philosophy

This trust facilitates continuous improvement by encouraging communication of learning tools, such as near misses and lessons learned.



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Operations Philosophy

Lessons learned from both internal and external environments will be shared across operational boundaries, and we will incorporate the values of those lessons through process modification.



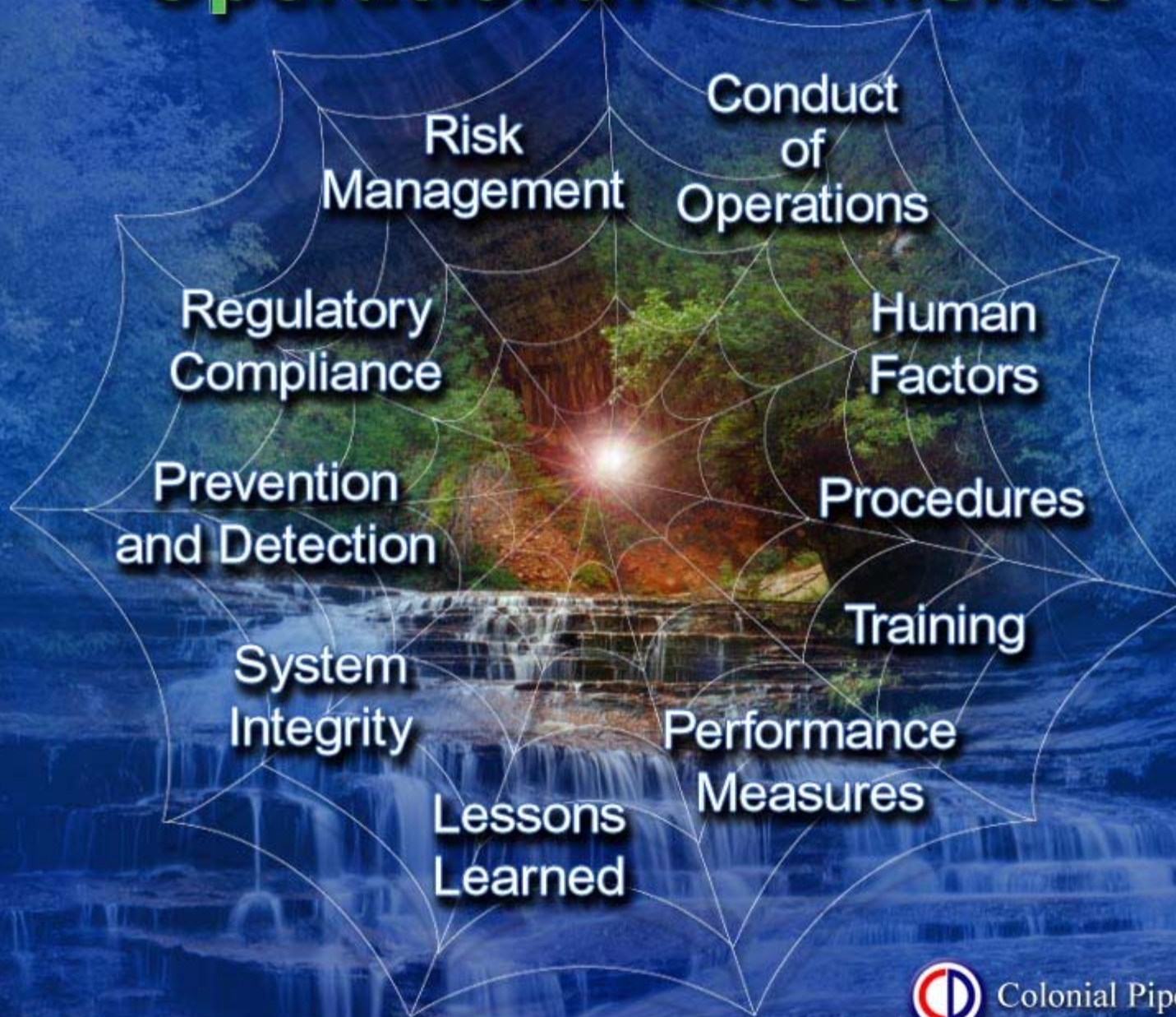
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Operational Excellence



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Operational Excellence

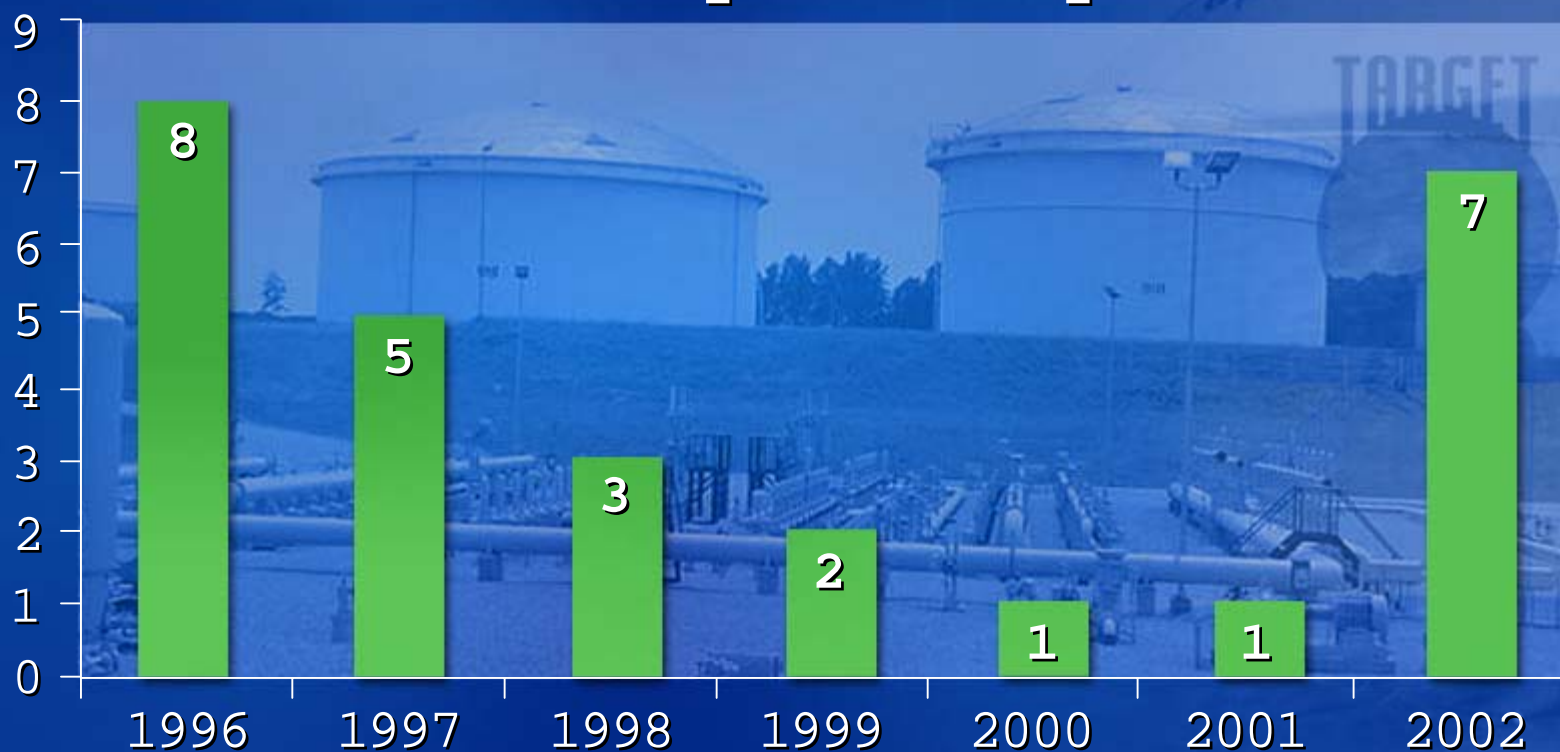
Operating Errors



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DOT Reportable Spills



"DOT Reportable" in context of
volume of product spilled only.
Reporting requirements changed in 2002



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Lessons Learned

- Original intent

Finalize a process, system, and structure for operational data feedback.

- Provide root cause analysis training to appropriate personnel
 - Have developed an analysis technique for pipelines
- Develop a process for communicating lessons learned information throughout the organization



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Lessons Learned (cont)

- Solicit improvement ideas for preventing spills and errors
- Built a database in 1999 that has been well used for lessons learned, near miss reporting and performance improvement recommendations
- Upgrading database to include further analysis and corrective actions of any abnormal operations




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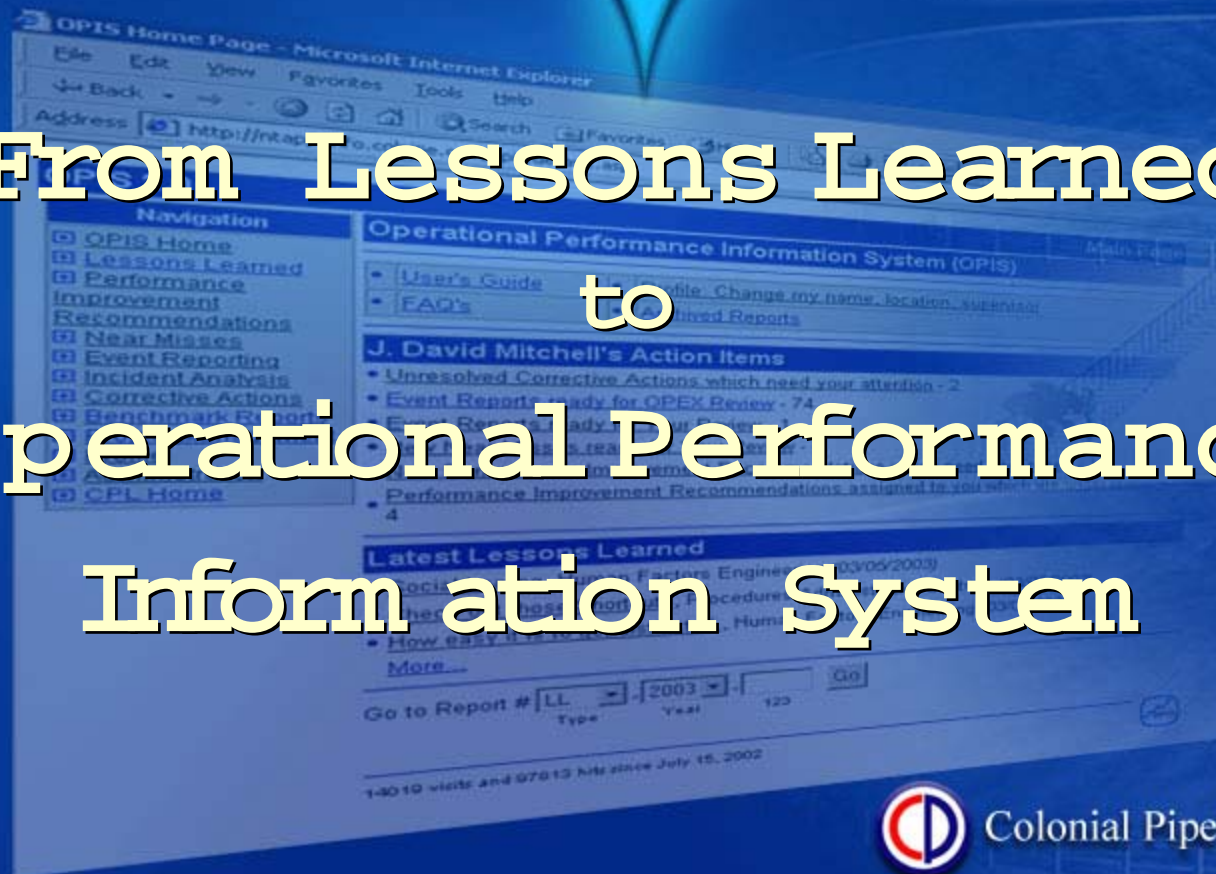
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From Lessons Learned to Operational Performance Information System



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Vision

The vision for the project is to provide a truly usable information system that promotes excellence in pipeline operations.

- Create a Knowledge Management Tool
 - Capture
 - Share
 - Store
 - Retrieve



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Mission

- Integrated, active system
- Reduce use of separate paper forms and move to electronic format
- Reduce duplicate entry of information
- Communications tool for all levels of company
- Close the loop on operations issues
- Provide reliable data and fact



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Analysis

- What do we need to communicate?
- To whom? For whom?
- What is the benefit?
- What parts of organization are impacted?



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Making It Happen

- Create collaborative, multidisciplinary core team to ensure
 - Design meets usability requirements
 - Technology accommodations are made
 - Final product reflects intended functionality
- Evaluate current products on the market for strengths and weaknesses



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Making It Happen (cont)

- Develop
 - Usability goals and objectives
 - Task analysis
 - User scenarios
 - User performance requirements
- Conduct field studies
- Work as partners with core team, end users, and stakeholders
- Document all results



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Design

- Brainstorm design concepts
- Develop screen flow and navigation model
- Validate early and often with users
- Create detailed design documentation



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Testing

- User acceptance testing
- Human factor evaluation
- Regression testing
- System integration testing
- Network bandwidth testing



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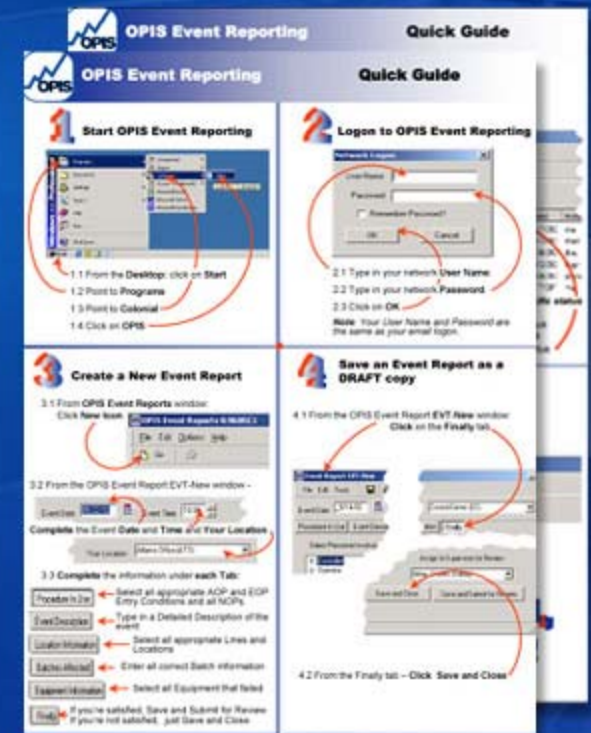
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Deployment

- Install application on all desktops
- Create training materials using human factors principles
 - User's guides
 - Desk aids
 - Training course material
- Develop training plan
 - Provide timely training



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Deployment

- Develop communications plan
 - What is coming
 - When it is coming
 - Why it is coming
 - How it will impact
 - Benefits
 - Who to contact with questions and support



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Implementation

- Install server side software
- Implement training plan
- Implement communications plan
- Provide timely training

- **GO LIVE**



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System Development Life Cycle: Manage It Well

- Plan for changing technology
- Continually evaluate what works well and what needs improvement
- Plan for upgrades and enhancements
 - Don't make too many changes
 - Can cause confusion
- Always look at least two versions out
- Conduct field studies of actual use



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Keys To Success

- Develop with User Centered Design concepts
 - Involve users in every step of process
 - Always consider usability of design
 - Early and on-going attention to users increases their satisfaction



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Keys To Success (cont)

- Manage scope to ensure application meets needs of majority
 - Keep the business requirements in mind
 - Can't satisfy every request
 - Communicate what is essential



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Keys To Success (cont)

- Apply human factors principles

Heuristic evaluations

Simple prototypes

Testing

Acceptance

Detailed prototypes



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Keys To Success (cont)

- Follow Management of Change process
 - Assess the risks of any change
 - Communicate with anyone who is affected
 - Design, develop, deploy
 - Train on the changes
 - Provide aids for users
 - Update all documentation



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How We Are Using Operational Performance Information System



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Remember the OPIS 2 Vision

The vision for the project is to provide a truly usable information system that promotes excellence in pipeline operations.

Usable System

Promoting Excellence?



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How Colonial Is Using OPIS

- Combine technology and human factors to achieve optimal results

Technology

&

Human Factors



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Technology and Human Factors

- Convenient and accessible
- Intuitive
- User guides, electronic and printed
- Formal classroom training
- Group and individual coaching



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Four A's = Learning

- Awareness
 - Promoting the program
- Acceptance
 - Highlighting the benefits
- Application
 - Integrate into normal operations
- Assimilation
 - Comes through daily use

4 A's



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OPIS Home Page

OPIS Home Page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print View Source

Address <http://ntapp.info.colpipe.com/opis/default.asp>

OPIS 2.0

Main Page

Navigation

- [OPIS Home](#)
- [Lessons Learned](#)
- [Performance Improvement Recommendations](#)
- [Near Misses](#)
- [Event Reporting](#)
- [Incident Analysis](#)
- [Corrective Actions](#)
- [Benchmark Reports](#)
- [Project Management](#)
- [Profile](#)
- [Administration](#)
- [CPL Home](#)

Operational Performance Information System (OPIS)

- [User's Guide](#)
- [Profile: Change my name, location, supervisor](#)
- [FAQ's](#)
- [Archived Reports](#)

J. David Mitchell's Action Items

- [Unresolved Corrective Actions which need your attention](#) - 2
- [Event Reports ready for OPEX Review](#) - 74
- [Event Reports ready for Your Review](#) - 1
- [New Near Misses ready for Your Review](#) - 1
- [New Performance Improvement Recommendations which need your review](#) - 1
- [Performance Improvement Recommendations assigned to you which are under review.](#) - 4

Latest Lessons Learned

- [Social Loafing](#), Human Factors Engineering (03/05/2003)
 - [Check out those Shortcuts](#), Procedures/Administrative Controls (03/05/2003)
 - [How easy it is to get distracted](#), Human Factors Engineering (03/02/2003)
- [More...](#)

Go to Report # - -
Type Year

14019 visits and 97813 hits since July 15, 2002



OP IS Event Report Page

Event Report EVT-New

File Edit Tools



Event Date 03/17/03



Event Time 10:04



Your Location Atlanta Office (ATO)



Procedure In Use

Event Description

Location Information

Batches Affected

Equipment Information

Finally

If an AOP was used, did it alleviate the situation?



Yes



No



N/A

Select Procedures Used and Entry Conditions

- + Abnormal Operations
- + Emergency Operations
- + Normal Operations

Selected Procedures Entry Conditions



Click the + to expand the list of procedures. Double click the entry condition to select the procedure in use.

Double click the entry condition to unselect it. At least one NOP must be selected.

Continue



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How Employees Participate

- Write lessons learned
- Submit near misses
- Make Performance Improvement Recommendations (PIR)
- Participate in incident analysis
- Enter OPIS event reports
- Read, study, discuss, apply what is learned



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Company Participation

Year	PIR	Near Misses	Lessons Learned	Abnormal Events
2000	17	229	2	71
2001	254	438	36	866
2002	299	358	52	1272



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Good Examples

- PIR
 - Technicians identify an infrequently used valve and recommended its removal
- Near Miss
 - Numbers transposed incorrectly could have resulted in an error
- Lesson Learned
 - Using STAR and independent verification prevents pumping of incorrect product



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Sample Data Categorized

UNITS		VALVES		POWER	
Shutdown un-commanded	82	Failed to Open/Close	36	Other w/o loss	38
Would not start	38	Open/Closed, no reason	10	Other with loss	14
Bad sensor or probe	15	Sequence failure	5	Weather w/o loss	14
Bearing seal	14	CV not responding	5	Weather with loss	14
Would not shutdown	6	Pig passage	3		
Other	4	Leaky	10		
		Misc	12		
	159		81		80
COMMUNICATIONS		FALSE ALARMS		IT/SCADA	
Loss of data	36	High tank	34	Loss of SCADA	5
Loss of voice	27	Max fill	38	Transient CMD	4
No reply	6	HULP	4	Misc	19
Line cut	4	Misc	9	Not responding	2
Phone disconnected	5	Inoperative	3	Unit monitor	15
Inoperative	3				
	81		88		45
HUMAN FACTORS		OTHER			
Valve not open	45	DRA	9		
Not following process	42	PLC	1		
Servicing in operation	17	Damage or crack	11		
Communications	16	Phone disconnected	1		
Misc	10	Dynatrols	1		
Poor planning	1	Prover	4		
		Procedure	1		
		Red Dye	2		
	131		30		



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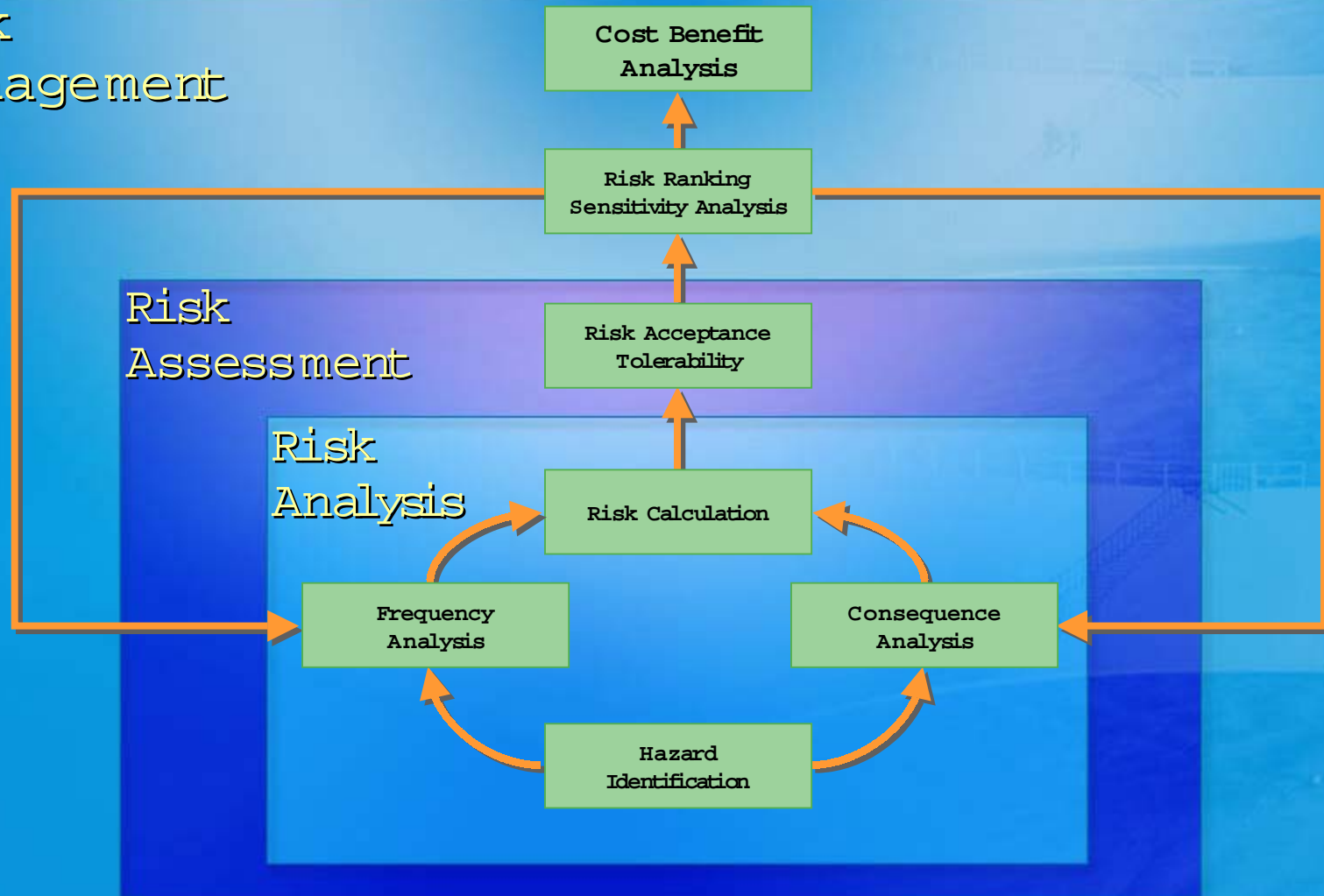
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Risk Management Model

Risk
Management

Risk
Assessment

Risk
Analysis



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Dealing With Issues

- All issues are assigned to a Subject Matter Expert
 - Engineering Services
 - Information Technology
 - Safety and Security
 - Performance Development
 - Environmental Management
 - Human Resources
 - Financial Management
- All issues are resolved
 - Some take longer than others



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Systemic Issues and the OPIS Steering Team

- Three step process
 - More thorough risk assessment
 - Perform business and cost assessment
 - Execute corrective action
- Continue to collect, categorize, analyze, and verify data



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The Goal

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Keys to Success

- Employee participation
 - Employees have ownership and responsibility for the program
 - Use OPIS data daily in training and operations
 - Operational Excellence Teams use information to coach others throughout the company



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Keys to Success (cont)

- Management support and involvement
 - Managers see all event reports
 - Managers “close loop” on all reports
 - Managers participate in Incident Analysis
 - OPIS Steering Team provides guidance



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Keys to Success (cont)

- Risk Management Principles
 - Do risk assessment on all issues
 - Conservative
 - Systematic
 - Disciplined
 - Aligned with Philosophy

Operations



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Keys to Success (cont)

- Company is seeing the results
 - Systemic issues are being addressed
 - Training is getting greater emphasis
 - Improved communication is occurring
 - Groups are coming out of their silos
 - Organization is recognizing importance of design for human factors

human



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Summary

- Colonial seeks to learn & improve
- Operations Philosophy is important
- Development process worked well
- OPIS is an important learning tool
- OPIS is helping Colonial learn and improve

OPIS



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What Makes The Difference?

- Genuine concern for preventing errors and spills
- Genuine desire to be a learning organization
- Relying on the people who do the work
- Living by our Operations Philosophy



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Operational Excellence



ZERO
ERRORS
SPILLS
LEAKS



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Target Zero

Our Target is Spill-Free, Error-Free Operations



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